



[6450-01-P]

DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

[Case No. RF-024]

**Petition for Waiver of LG Electronics, Inc. from the Department of Energy
Residential Refrigerator and Refrigerator-Freezer Test Procedure and Grant of
Interim Waiver**

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of Petition for Waiver, Notice of Granting Application for Interim Waiver, and Request for Public Comments.

SUMMARY: This notice announces receipt of a petition for waiver from LG Electronics, Inc. (LG) regarding specified portions of the U.S. Department of Energy (DOE) test procedure for determining the energy consumption of electric refrigerators and refrigerator-freezers. It also grants LG with an interim waiver from that procedure. The waiver request pertains to the basic models set forth in LG's petition that incorporate dual compressors. In its petition, LG provides an alternate test procedure that addresses difficulties in testing dual compressor systems according to the DOE test procedure. DOE solicits comments, data, and information concerning LG's petition and the suggested alternate test procedure.

DATES: DOE will accept comments, data, and information with respect to the LG Petition until, but no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: You may submit comments, identified by case number “RF-024,” by any of the following methods:

- Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.
- E-mail: AS_Waiver_Requests@ee.doe.gov Include the case number [Case No. RF-024] in the subject line of the message.
- Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J/1000 Independence Avenue, SW, Washington, DC 20585-0121. Telephone: (202) 586-2945. Please submit one signed original paper copy.
- Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 950 L’Enfant Plaza SW, Suite 600, Washington, DC 20024. Please submit one signed original paper copy.

Docket: For access to the docket to review the background documents relevant to this matter, you may visit the U.S. Department of Energy, 950 L’Enfant Plaza SW, Washington, DC, 20024; (202) 586-2945, between 9:00 a.m. and 4:00 p.m., Monday through Friday, except Federal holidays. Available documents include the following

items: (1) this notice; (2) public comments received; (3) the petition for waiver and application for interim waiver; and (4) prior DOE rulemakings regarding similar refrigerator-freezers. Please call Ms. Brenda Edwards at the above telephone number for additional information.

FOR FURTHER INFORMATION CONTACT: Mr. Bryan Berringer, U.S.

Department of Energy, Building Technologies Program, Mail Stop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-0371. E-mail: Bryan.Berringer@ee.doe.gov.

Ms. Elizabeth Kohl, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC-71, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-7796. E-mail: Elizabeth.Kohl@hq.doe.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Authority

Title III, Part B of the Energy Policy and Conservation Act of 1975 (EPCA), Pub. L. 94-163 (42 U.S.C. 6291-6309, as codified, established the Energy Conservation Program for Consumer Products Other Than Automobiles, a program covering most major household appliances, which includes the electric refrigerators and refrigerator-freezers that are the focus of this notice.¹ Part B includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require

¹ For editorial reasons, upon codification in the U.S. Code, Part B was re-designated Part A.

information and reports from manufacturers. Further, Part B authorizes the Secretary of Energy to prescribe test procedures that are reasonably designed to produce results which measure the energy efficiency, energy use, or estimated annual operating costs of a covered product, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) The current test procedure for electric refrigerators and electric refrigerator-freezers is contained in 10 CFR part 430, subpart B, appendix A1.

DOE's regulations for covered products contain provisions allowing a person to seek a waiver for a particular basic model from the test procedure requirements for covered consumer products when (1) the petitioner's basic model for which the petition for waiver was submitted contains one or more design characteristics that prevent testing according to the prescribed test procedure, or (2) when the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 430.27(a)(1). Petitioners must include in their petition any alternate test procedures known to the petitioner to evaluate the basic model in a manner representative of its energy consumption characteristics. 10 CFR 430.27(b)(1)(iii).

The Assistant Secretary for Energy Efficiency and Renewable Energy (the Assistant Secretary) may grant a waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(l). Waivers remain in effect pursuant to the provisions of 10 CFR 430.27(m).

Any interested person who has submitted a petition for waiver may also file an application for interim waiver of the applicable test procedure requirements. 10 CFR 430.27(a)(2). The Assistant Secretary will grant an interim waiver request if it is determined that the applicant will experience economic hardship if the interim waiver is denied, if it appears likely that the petition for waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the petition for waiver. 10 CFR 430.27(g).

II. Petition for Waiver of Test Procedure

On May 10, 2012, LG filed a petition for waiver from the test procedure applicable to residential electric refrigerators and refrigerator-freezers set forth in 10 CFR Part 430, Subpart B, Appendix A1. On June 28, 2012, LG amended its request by revising the list of particular models covered by its request. The May 2012 request initially covered a number of LG and Kenmore-branded products; the June 2012 request revised this list to include only certain LG models. LG is seeking a waiver because it is developing new refrigerator-freezers that incorporate a dual compressor design that is not contemplated under DOE's test procedure. In its petition, LG seeks a waiver from the existing DOE test procedure applicable to refrigerators and refrigerator-freezers under 10 CFR Part 430 for LG's dual compressor products. LG states that its dual compressor products use shared compressor systems that are controlled by a 3-way valve. This type of system, LG argues, differ from the independent, sealed systems that the DOE test procedure is designed to address. In its petition, LG has set forth an alternate test

procedure and notes in support of its petition that DOE has already granted Sub-Zero a similar waiver pertaining to the use of dual compressor-equipped refrigerators. See 76 FR 71335 (November 17, 2011) (interim waiver) and 77 FR 5784 (February 6, 2012) (Decision and Order).

III. Application for Interim Waiver

LG also requested an interim waiver from the existing DOE test procedure. Under 10 CFR 430.27(b)(2), each application for interim waiver must demonstrate likely success of the petition for waiver and address the economic hardship and/or competitive disadvantage that is likely to result absent a favorable determination on the application for interim waiver.” An interim waiver may be granted if it is determined that the applicant will experience economic hardship if the application for interim waiver is denied; if it appears likely that the petition for waiver will be granted; and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination of the petition for waiver. 10 CFR 430.27(g).

DOE has determined that LG’s application for interim waiver does not provide sufficient market, equipment price, shipments and other manufacturer impact information to permit DOE to evaluate the economic hardship LG might experience absent a favorable determination on its application for interim waiver. DOE recognizes, however, that the DOE test procedure for dual compressor systems primarily addresses independent, sealed systems, which differ from the shared system used by the models

listed in LG's petition. As a result, it is not possible to test these products using the DOE test procedure, and use of the test procedure would provide test results so unrepresentative as to provide materially inaccurate comparative data. DOE reviewed the alternate procedure and determined that it will alleviate the testing problems associated with LG's implementation of a dual compressor system. Therefore, it appears likely that LG's petition for waiver will be granted.

For the reasons stated above, DOE grants LG's application for interim waiver from testing of its refrigerator-freezer product line containing dual compressors. Therefore, *it is ordered that:*

The application for interim waiver filed by LG is hereby granted for LG's refrigerator-freezer product lines that incorporate dual compressors subject to the following specifications and conditions:

(1) LG shall be required to test and rate its refrigerator-freezer product line containing dual compressors according to the alternate test procedure as set forth in section IV, "Alternate test procedure."

(2) The interim waiver applies to the following basic model groups:

LG Brand

LFX32955**

LFX33955**

LFX34955**

LMX32955**

LMX33955**

LMX34955**

(NOTE: Each “*” represents a letter.)

DOE makes decisions on waivers and interim waivers for only those models specifically set out in the petition, not future models that may be manufactured by the petitioner. LG may submit a new or amended petition for waiver and request for grant of interim waiver, as appropriate, for additional models of refrigerator-freezers for which it seeks a waiver from the DOE test procedure. In addition, DOE notes that granting of an interim waiver or waiver does not release a petitioner from the certification requirements set forth at 10 CFR Part 429.

Further, this interim waiver is conditioned upon the presumed validity of statements, representations, and documents provided by the petitioner. DOE may revoke or modify this interim waiver at any time upon a determination that the factual basis underlying the petition for waiver is incorrect, or upon a determination that the results from the alternate test procedure are unrepresentative of the basic models’ true energy consumption characteristics.

IV. Alternate Test Procedure

For the duration of the interim waiver, LG shall be required to test the products listed above according to the test procedures for residential electric refrigerator-freezers prescribed by DOE at 10 CFR Part 430, Subpart B, Appendix A1, except that, for the LG

products listed above only, replace the multiple defrost system section 5.2.1.4 of Appendix A1 with the following:

5.2.1.4 Dual Compressor Systems with Dual Automatic Defrost. The two-part test method in section 4.2.1 must be used, and the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

- . 1440 = number of minutes in a day
- . ET is the test cycle energy (kWh/day);
- . i is the variable that can equal to 1, 2 or more that identifies the compartment with distinct defrost system;
- . D is the total number of compartments with distinct defrost systems;
- . EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);
- . T1 is the length of time for EP1 (minutes);
- . EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);
- . T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.

. CT_i is the compressor on time between defrosts for only compartment i. CT_i for compartment i with long time automatic defrost system is calculated as per 10 CFR Part 430, Subpart B, Appendix A1 clause 5.2.1.2. CT_i for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Steady State for EP1:

The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments are used for test period 1, each segment must comply with above requirement.

Steady State for EP2_i:

The second (defrost) part of the test must be preceded and followed by regular compressor cycles. The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the EP1 test period temperature average for each compartment.

Test Period for EP2_i, T2_i:

EP2_i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2_i to be at least 24 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the

previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following regular freezer compressor cycles, ending at the end of a regular freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24 hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

Test Measurement Frequency Measurements shall be taken at regular interval not exceeding 1 minute.

[End of 5.2.1.4]

V. Summary and Request for Comments

Through today's notice, DOE grants LG an interim waiver from the specified portions of the test procedure applicable to LG's line of refrigerator-freezers with dual compressors and announces receipt of LG's petition for waiver from those same portions of the test procedure. DOE publishes LG's petition for waiver pursuant to 10 CFR 430.27(b)(1)(iv). The petition includes a suggested alternate test procedure to determine the energy consumption of LG's specified refrigerator-freezers with dual compressors. LG is required to follow this alternate procedure as a condition of its interim waiver, and DOE is considering including this alternate procedure in its subsequent Decision and Order.

DOE solicits comments from interested parties on all aspects of the petition, including the suggested alternate test procedure and calculation methodology. Pursuant to 10 CFR 430.27(b)(1)(iv), any person submitting written comments to DOE must also

send a copy of such comments to the petitioner. The contact information for the petitioner is: John I. Taylor, Vice President, Government Relations and Communications, LG Electronics USA, Inc., 1776 K Street NW, Washington, DC 20006. All submissions received must include the agency name and case number for this proceeding. Submit electronic comments in WordPerfect, Microsoft Word, Portable Document Format (PDF), or text (American Standard Code for Information Interchange (ASCII)) file format and avoid the use of special characters or any form of encryption. Wherever possible, include the electronic signature of the author. DOE does not accept telefacsimiles (faxes).

According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit two copies to DOE: one copy of the document including all the information believed to be confidential, and one copy of the document with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Issued in Washington, DC, on July 16, 2012.

Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

May 10, 2012

The Honorable David Danielson
Assistant Secretary, Energy Efficiency and Renewable Energy
United States Department of Energy
Mail Station EE-1
Forrestal Building
1000 Independence Avenue, SW
Washington, DC 20585

**Re: Petition for Waiver and Application for Interim Waiver,
 Test Procedure for Refrigerators, Refrigerator-Freezers, and Freezers**

Dear Assistant Secretary Danielson:

LG Electronics, Inc. (LG) respectfully submits this Petition for Waiver and Application for Interim Waiver, pursuant to 10 C.F.R. § 430.27, as related to DOE's test procedure for refrigerators, refrigerator-freezers, and freezers. 10 C.F.R. Part 430, Subpart B, Appendix A1. This request concerns LG refrigerator-freezers that use dual compressors. DOE has already granted Sub-Zero such waivers. 77 Fed. Reg. 5784 (Feb. 6, 2012) (waiver); 76 Fed. Reg. 71335 (Nov. 17, 2011) (interim waiver). LG requests expedited treatment of the Petition and Application.

LG is a manufacturer of refrigerator-freezers and other products sold worldwide, including in the United States. LG's U.S. operations are LG Electronics USA, Inc., with headquarters at 1000 Sylvan Avenue, Englewood Cliffs, NJ 07632 (tel. 201-816-2000). Its worldwide headquarters are located at LG Twin Towers 20, Yoido-dong, Youngdungpo-gu Seoul, Korea 150-721; (tel. 011-82-2-3777-1114); URL: <http://www.LGE.com>. LG's principal brands include LG® and OEM brands, including GE® and Kenmore®.

As DOE states in its grant of a waiver to Sub-Zero, DOE's test procedure for dual compressors under 10 C.F.R. Part 430 assumes independent, sealed systems. In contrast,

Sub-Zero's dual compressor products have shared systems. In such circumstances, DOE recognized that it is not possible to test such dual compressor products using the DOE test procedure, and use of the test procedure would provide test results so unrepresentative as to provide materially inaccurate comparative data. 77 Fed. Reg. at 5784-85. DOE determined that an alternative test procedure set forth in the waiver would alleviate the testing problems associated with Sub-Zero's implementation of a dual compressor system while accurately measuring the energy consumption of these dual products. Id. at 5785.

The factors in the Sub-Zero waiver apply equally to LG dual compressor products. LG's dual compressor products have shared compressor systems, controlled by a 3-way valve, and do not have the independent, sealed systems assumed under the DOE test procedure. Therefore, as recognized by DOE, it is not possible to test such products using the DOE test procedure, and use of the test procedure would provide test results so unrepresentative as to provide materially inaccurate comparative data.

LG requests that DOE grant a waiver that would provide for its dual compressor products set forth in Appendix I of this waiver request the following alternative test procedure consistent with the waiver provided to Sub-Zero:

LG shall be required to test the products listed in Appendix I of this waiver request according to the test procedures for electric refrigerator-freezers prescribed by DOE at 10 CFR Part 430, Subpart B, Appendix A1, except that, for the LG products listed in Appendix I of this waiver request only, replace the multiple defrost system section 5.2.1.4 of Appendix A1 with the following:

5.2.1.4 Dual Compressor Systems with Dual Automatic Defrost. The two-part test method in section 4.2.1 must be used, and the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times EP1/T1) + \sum_{i=1}^D [(EP2_i - (EP1 \times T2_i/T1)) \times (12/CT_i)]$$

Where:

- . 1440 = number of minutes in a day**
- . ET is the test cycle energy (kWh/day);**
- . i is the variable that can equal to 1, 2 or more that identifies the compartment with distinct defrost system;**
- . D is the total number of compartments with distinct defrost systems;**
- . EP1 is the dual compressor energy expended during the first part of the test (it is calculated for a whole number of freezer compressor cycles at least 24 hours in duration and may be the summation of several running periods that do not include any precool, defrost, or recovery periods);**
- . T1 is the length of time for EP1 (minutes);**
- . EP2i is the total energy consumed during the second (defrost) part of the test being conducted for compartment i. (kWh);**
- . T2i is the length of time (minutes) for the second (defrost) part of the test being conducted for compartment i.**
- . CTi is the compressor on time between defrosts for only compartment i. CTi for compartment i with long time automatic defrost system is calculated as per 10 CFR Part 430, Subpart B, Appendix A1 clause 5.2.1.2. CTi for compartment i with variable defrost system is calculated as per 10 CFR part 430 subpart B appendix A1 clause 5.2.1.3. (hours rounded to the nearest tenth of an hour).**

Stabilization:

The test shall start after a minimum 24 hours stabilization run for each temperature control setting.

Steady State for EP1:

The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the test period temperature average for each compartment. Make this determination for the fresh food compartment for the fresh food compressor cycles closest to the start and end of the test period. If multiple segments are used for test period 1, each segment must comply with above requirement.

Steady State for EP2i:

The second (defrost) part of the test must be preceded and followed by regular compressor cycles. The temperature average for the first and last compressor cycle of the test period must be within 1.0 [degrees] F (0.6 [degrees] C) of the EP1 test period temperature average for each compartment.

Test Period for EP2i, T2i:

EP2i includes precool, defrost, and recovery time for compartment i, as well as sufficient dual compressor steady state run cycles to allow T2i to be at least 24 hours. The test period shall start at the end of a regular freezer compressor on-cycle after the previous defrost occurrence (refrigerator or freezer). The test period also includes the target defrost and following regular freezer compressor cycles, ending at the end of a regular freezer compressor on-cycle before the next defrost occurrence (refrigerator or freezer). If the previous condition does not meet 24

hours time, additional EP1 steady state segment data could be included. Steady state run cycle data can be utilized in EP1 and EP2i.

Test Measurement Frequency Measurements shall be taken at regular interval not exceeding 1 minute.

* * *

The waiver should continue until DOE adopts an applicable amended test procedure.

LG also requests an interim waiver for its testing and rating of the foregoing models. The petition for waiver is likely to be granted, as evidenced not only by its merits, but also because DOE has granted such a waivers and interim waiver to Sub-Zero. Hence, grant of an interim waiver for LG is appropriate.

We would be pleased to discuss this request with DOE and provide further information as needed.

LG requests expedited treatment of the Petition and Application. In that regard, DOE states in its March 7, 2011 notice concerning its certification, compliance and enforcement rule, "The Department renews its commitment to act swiftly on waiver requests." 76 Fed. Reg. 12422, 12442.² LG appreciates this commitment by DOE.

We hereby certify that all manufacturers of domestically marketed units of the same product type have been notified by letter of this petition and application, copies of which letters are set forth in Appendix II hereto.

² DOE goes on to state that "DOE, as a matter of policy, will refrain from enforcement actions related to a waiver request that is pending with the Department" Id.

Sincerely,

John I. Taylor
Vice President
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APPENDIX I

The waiver and interim waiver requested herein should apply to testing and rating of the following model series of refrigerator-freezers. Please note that the actual model numbers will vary to account for such factors as year of manufacture, product color, or other features. Nonetheless, they will always have dual compressors.

(In the chart below, “#” represents a number; “*” represents a letter.)

LG Brand

LFX3#9##**
LMX3#9##**
LFC3#7##**
LFX2#9##**
LMX2#9##**
LFC2#7##**

Kenmore Brand

795.71###
795.72###
795.73###
795.74###

APPENDIX II

June 28, 2012

The Honorable David Danielson
Assistant Secretary, Energy Efficiency and Renewable Energy
United States Department of Energy
Mail Station EE-1
Forrestal Building
1000 Independence Avenue, SW
Washington, DC 20585

**Re: Petition for Waiver and Application for Interim Waiver,
Test Procedure for Refrigerators, Refrigerator-Freezers, and Freezers**

Dear Assistant Secretary Danielson:

LG Electronics, Inc. (LG) hereby respectfully amends its May 10, 2012 Petition for Waiver and Application for Interim Waiver, pursuant to 10 C.F.R. § 430.27, as related to DOE's test procedure for refrigerators, refrigerator-freezers, and freezers. 10 C.F.R. Part 430, Subpart B, Appendix A1. Specifically, LG requests that DOE grant a waiver that would provide for its dual compressor products set forth in Appendix I hereto (rather than the products set forth in Appendix I to its May 10, 2012 submission).

Thank you for consideration of LG's waiver request.

Sincerely,

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APPENDIX I

The waiver and interim waiver requested herein should apply to testing and rating of the following model series of refrigerator-freezers. Please note that the actual model numbers will vary to account for such factors as year of manufacture, product color, or other features. Nonetheless, they will always have dual compressors.

(In the chart below, “*” represents a letter.)

LG Brand

LFX32955**
LFX33955**
LFX34955**
LMX32955**
LMX33955**
LMX34955**

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